BS 181
SINGLE CHANNEL POWER SUPPLY

USER MANUAL

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1.0 SAFETY INSTRUCTIONS

Please always follow these instructions to help ensure against injury to yourself and/or damage to the system

1. Read all safety and operating instructions before you operate the apparatus.

1. Retain all safety and operating instructions for future reference.

2. Heed all warnings on the apparatus and in the safety and operating instructions and follow all installation and use instructions.

3. Unplug the apparatus from the AC power outlet before cleaning. Use only a damp cloth for cleaning the exterior of the apparatus.

4. Do not use accessories or attachments not recommended by the manufacturer, as they may cause hazards and void the warranty.

5. Do not operate this apparatus in high humidity areas or expose it to water or moisture.

6. Do not place the apparatus on an unstable cart, stand, tripod, bracket or table. The apparatus may fall, causing serious personal injury and damage to the apparatus.

7. Do not block or cover any openings in the apparatus. These are provided for ventilation and protection from overheating. Never place the apparatus near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat. Do not place the apparatus in an enclosure such as a cabinet without proper ventilation.

8. Operate the apparatus using only the type of power source indicated on the marking label. Unplug the apparatus' power cord by gripping the power plug, not the cord.

9. Insert the plug properly. Do not defeat the safety purpose of the polarized or grounding-type plug. An American polarized AC line plug has two blades with one wider than the other. This plug will fit only one way into the power outlet. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact an electrician to replace the obsolete outlet. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician to replace the obsolete outlet.

10. Route power supply cords so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords at plugs, convenience receptacles, and the point where they exit from the apparatus.

11. Do not overload wall outlets or extension cords, as this can result in a risk of fire or electrical shock.

12. Unplug this apparatus during lightning storms or when unused for long periods of time.

13. Never insert objects of any kind into the apparatus through openings, as the objects may touch Dangerous voltage points or short out parts. This could cause fire or electrical shock.

14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

2.0 GENERAL DESCRIPTION BS 181

The BS 181 is designed to be a power supply in an ASL intercom system and can be used in portable as well as fixed applications.

The intercom line power supply is fully protected against short circuit or excessive thermal condition and can drive at least fifteen BS15 or BS 17 beltpacks operating at full power.

3.0 MECHANICAL INSTALLATION

Adequate ventilation must be provided by allowing sufficient space around the sides and rear of the unit to ensure free circulation of air. Forced cooling is not required.

After a period of time the unit will feel warm to the touch. This is quite normal, and should be no cause for alarm.

4.0 MAINS POWER

The BS 181 may be connected to a mains power outlet (100 - 240 V AC, 50/60 Hz, 60 watts).
The outlet should have a clean earth. Avoid using mains power outlets which also power dimmer controlled lighting equipment.

The wires in the mains lead are color coded in accordance with the following code:
Green/ yellow: Earth / safety ground
Blue: Neutral
Brown: Live

In case the colors of the wires in the mains lead do not correspond with the colored markings identifying the terminals in your plug, proceed as follows:

- The wire which is colored green-and-yellow must be connected to the terminal in the plug which is marked with the letter "E", or by the earth symbol or is colored green.
- The wire which is colored blue must be connected to the terminal which is marked with the letter "N" or is colored black.
- The wire which is colored brown must be connected to the terminal which is marked with the letter "L" or is colored red.

Safety Earth

The green-and-yellow wire of the mains cord must always be connected to the electrical installation safety earth or ground.
This is essential for personal safety as well for proper operation of the BS 181 and the other connected stations. This wire is internally connected to all exposed metal surfaces.

Powering up procedure:

- Make sure that the power switch on the left side of the front panel is OFF.
- Connect the power cord to the rear of the station.
- Plug the other end of the power cord into a **PROPERLY GROUNDED** mains outlet.
- Turn on the power with the red button. The green power LED illuminates indicating the BS 181 is active.

5.0 FRONT PANEL CONTROLS

1 POWER ON/OFF switch
Mains power button for switching ON and OFF the power supply.

2 POWER LED
This LED illuminates if line power is supplied by the internal power supply.

6.0 REAR PANEL CONTROLS & CONNECTORS

3 INTERCOM LINE connectors

These two XLR-3 connectors are for connecting the user stations, via standard microphone cable.
Pin assignments:
Pin 1: 0 V / ground shield
Pin 2: +30 V power wire
Pin 3: audio wire

4 FUSE holder

A fuse protects the BS 181 against severe internal damage in case of malfunction in the power section. Disconnected the power cord before replacing the fuse. Place the correct fuse in the holder: T 1250 mA (for all mains voltages 100 – 240V AC)
An extra internal fuse is located on the printed circuit board. Replace this fuse with a 4A type only.

5 MAINS INLET

IEC Mains connector. For correct wiring and operation refer to section 4.0.

7.0 TECHNICAL SPECIFICATIONS BS 181

Switch Mode Power Supply
mains voltage range: 100 -240 V AC, 50-60 Hz
DC output voltage: +30 V DC (+/-5%)
max. output power: 45 watts

Dimensions & Weight
Width: 176 mm / Height: 42 mm
Depth: 139 mm / Weight: 900 grams

System Specifications
dynamic range: 80 dB (1 kHz, THD < 1%)
frequency response: 200 Hz – 15 kHz (-3 dB)
call signal (send): 2.8 mA
call signal threshold (receive): +2.4 V DC
operating voltage: 24 - 32 V DC
line impedance: 350 Ω (1kHz), 2.2 kΩ (DC)
audio level: nom. -18 dBu, max. 0 dBu

0 dBu defined as 775 mV into open circuit.

ASL reserves the right to alter specifications without prior notice

8.0 PARTY LINE, TECHNICAL CONCEPT

User stations in an ASL intercom system are connected via one or several 'party lines'.
A party line offers two way ('full duplex') communication and consists of standard microphone (multi-pair) cable. One wire is used as an audio line, one as a power line and the screen of the cable functions as earth/return.

Current drive is used for signal transfer.
Each station utilizes a current amplifier to amplify the microphone signal and place it on the common audio line where, due to the constant line impedance (situated in the power supply between XLR pin 3 and 1), a signal voltage is developed which can be further amplified and sent to the headphones or loudspeakers.

This principle has three advantages:

- the use of a single audio line allows several stations to talk and listen simultaneously
- due to the high bridging impedance offered by each station, the number of stations on the party line has no influence on the level of the communications signal
- power and audio to the intercom stations use the same cable

The Call signal is also sent as a current on the audio line. It develops a DC potential over the line impedance which will be sensed by each station and interpreted as a Call signal.

9.0 CABLING

The intercom lines (the 'party lines') are of the shielded two-conductor microphone cable type. The intercom line connectors are of the XLR-3 type. Audio and Call signals are on pin 3, DC power is on pin 2 and pin 1 is connected to the shield of the cable which functions as the common return for audio and power.

To avoid earth loops (hum) and the possible effect of electromagnetic fields and to minimize power loss, certain rules have to be obeyed when installing the cabling of an intercom system :

Use high quality cable
Use high quality microphone cable (shielded two conductor cable, minimum 2x 0.30 mm2).
In case multi-pair microphone cable is used, each pair should consist of two conductors (minimum 2x 0.15 mm2) with separate shield and an overall shield.

Use flexible cable
Use flexible single and multi-pair microphone cable instead of cable with solid cores, especially when the cable is subjected to bending during operation or installation.

Cable screens to XLR pin 1
The screen of each separate microphone cable and/or the screen of each single pair in a multi-pair cable, should be connected to pin 1 of each XLR-3 connector. Do not connect these screens to the metal housing of ASL units or XLR-3 wall boxes. See 'Earthing Concept'.

Connect metal cable trunks, wall boxes and overall multi-pair cable screens to clean earth
Metal cable trunks, metal wall boxes and overall multi-pair cable screens should be interconnected and, at the 'central earth point' in the intercom network only, be connected to a clean earth or a safety earth.
See section 'Earthing Concept'.

Keep metal connection boxes and cable trunks isolated from other metal parts
Metal trunks or pipes for intercom cables and metal connection boxes should be mounted in such a way that they are isolated from any other metal housing or construction part.

Keep cables parallel as much as possible
When two (multi channel) units in a network are connected by more than one cable, make sure that these cables are parallel to each other over the whole distance between those units. When using multi-pair cable, parallelism is ensured in the best possible way.

Avoid closed loops
Always avoid that intercom cables are making a closed loop. So-called 'ring intercom' should not physically be cabled as a ring..

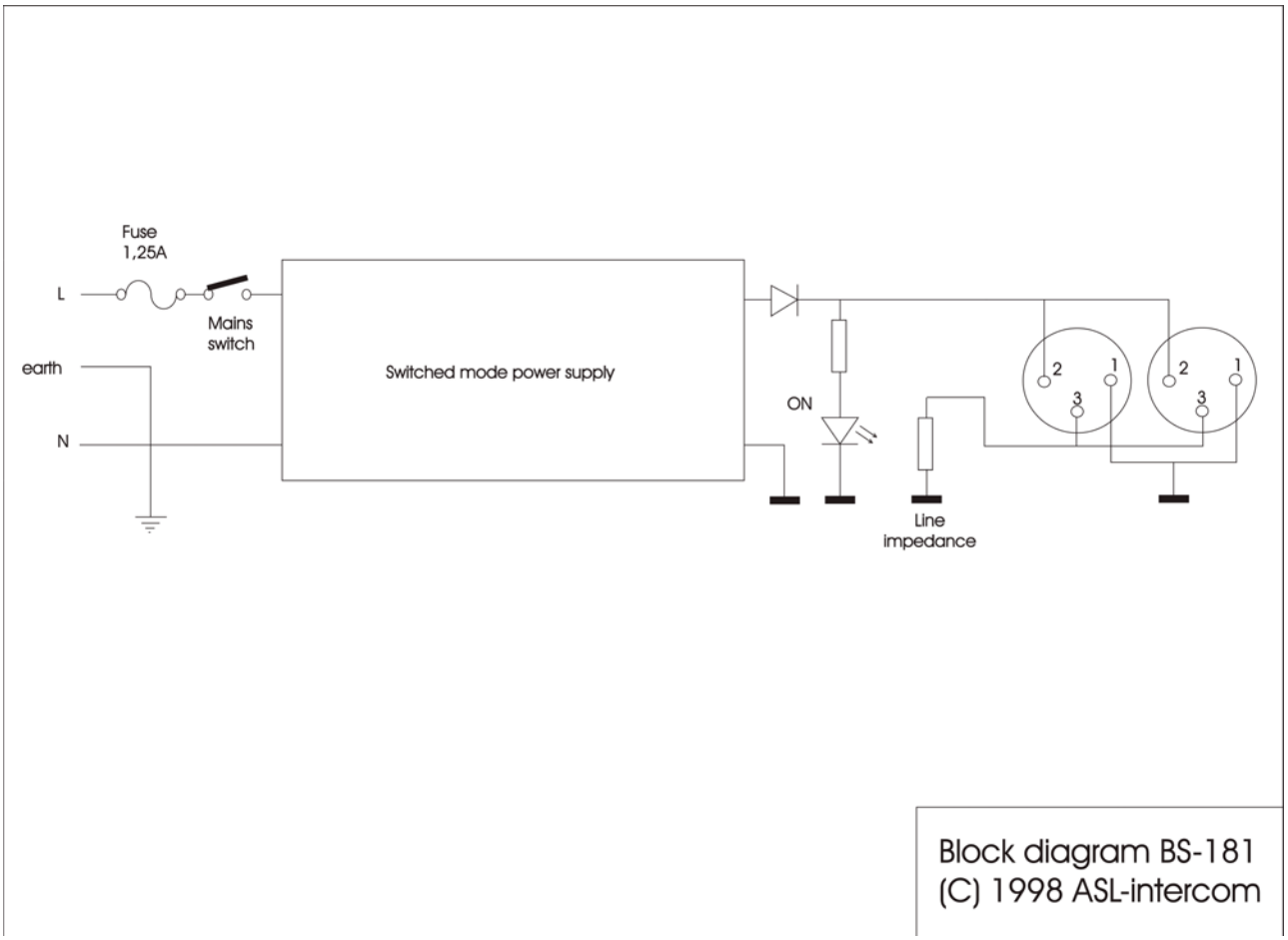
Keep cables away from electromagnetic sources
Keep intercom cables away from high energy cables, e.g. 115/230/400V mains power or dimmer controlled feeds for spotlights. Intercom cables should cross high energy cables at an angle of 90º only. Intercom cables should never be in the same trunks as energy cables.

Place power supply in a central position
In case of a system powered by a separate power supply: In order to diminish power losses, place the power supply as close as possible to where most power consumption occurs, in other words most user stations are placed.

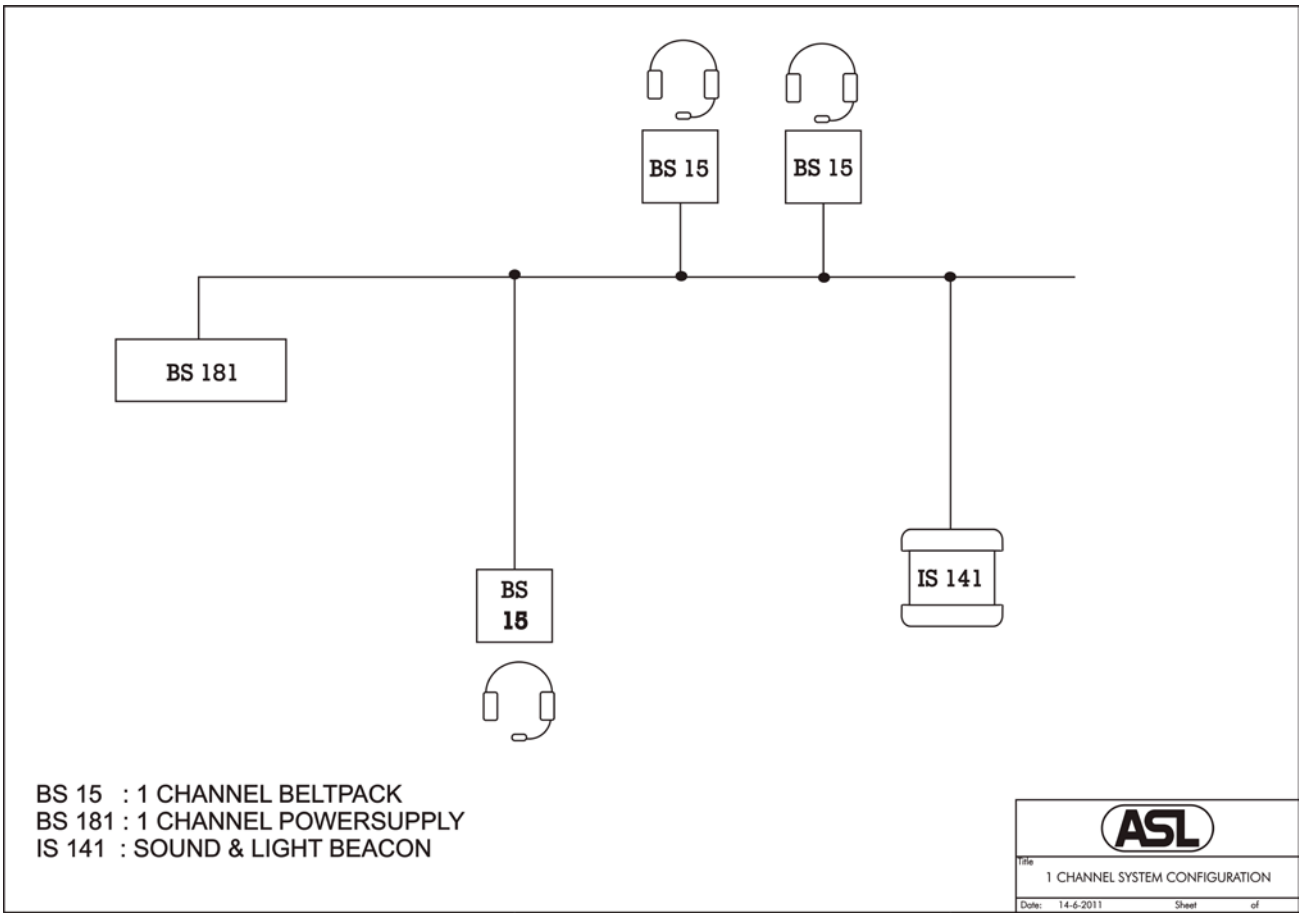
ASL powered units to a 'clean' mains outlet
Master stations or power supplies should be connected to a mains outlet with a clean earth. Other audio equipment may be connected to this mains outlet, but avoid using an outlet which also powers dimmer controlled lighting systems.

in case of more complex installations, don't hesitate to contact us. Please send us a block diagram of the planned network with a list of all user stations and their positions, and we are happy to advise you on cabling lay out.

10.0 BLOCK DIAGRAM BS 181



11.0 SYSTEM CONFIGURATION



12.0 EARTHING CONCEPT